previously undergone splenectomy.[2] We report a case of meningitis caused by this organism in an otherwise healthy woman.

Case report

A 66-year-old previously healthy Caucasian woman was admitted with a history of fever, myalgia, and malaise for two days and of severe headache for one. She developed photophobia, vomiting, neck stiffness, and a rash on the day of admission. She denied recent trauma or infection but remarked that she and her husband had cleaned out the drains round their house just before she became ill. She frequently played with their pet dog but had never been bitten.

On admission she was pyrexial with clinical signs of meningitis and a macular rash confined to the trunk. Other findings were blood white cell count $10{\cdot}8\times10^9$/l with $8{\cdot}9\times10^9$/l neutrophils. Chest *x*-ray films showed bilateral basal collapse. Lumbar puncture yielded cloudy cerebrospinal fluid under slightly increased pressure with a white cell count of 575×10^6/l (nearly all polymorphonuclear leucocytes), protein content 2·4 g/l, and glucose < 1·25 mmol/l (22·52 mg/100 ml). Blood glucose was 5·2 mmol/l (93·70 mg/100 ml). Gram-stained films of cerebrospinal fluid deposit showed large numbers of slender Gram-negative bacilli. Cultures yielded a fastidious Gram-negative bacillus after five days' incubation on Columbia blood agar in an atmosphere containing 7% carbon dioxide. A similar organism was also isolated from blood cultures taken on the day of admission after prolonged incubation of subcultures in an atmosphere of 7% carbon dioxide. Both isolates were finally identified as a dysgonic fermenter type 2 by the Center for Disease Control (Atlanta, Georgia, USA).

She was treated for three days with intravenous benzylpenicillin 2 megaunits four hourly and intravenous chloramphenicol 750 mg eight hourly. On day 4 the chloramphenicol regimen was changed to 500 mg orally six hourly, and on day 7 penicillin was discontinued. Chloramphenicol was continued until the tenth day, by which time the patient had been apyrexial for three days and was symptom free. On discharge three days later her recovery was complete with no neurological deficit and chest *x*-ray films showing only minimal linear collapse in the right lower lobe.

Comment

Of the 17 cases reported by Butler *et al*[1] only two resembled our case in having previously been healthy and without a history of dog bite. Like ours, two of their 17 patients presented with purulent meningitis, but their previous state of health was not reported. Pulmonary infiltration was present in six of Butler's cases, but there was no instance of a macular rash. In our case large numbers of Gram-negative bacilli were seen in the smears of cerebrospinal fluid, and when no organisms had grown on culture after three days the plates were further incubated until growth appeared five days later. The blood subcultures also received prolonged incubation. Had the organism been present only in the blood we might have failed entirely to grow it. For this reason we suspect, as do Butler *et al*,[2] that bacteraemia due to a dysgonic fermenter type 2 organism is probably considerably underdiagnosed.

1 Butler T, Weaver RE, Venkata-Ramani TK, *et al.* Unidentified Gram-negative rod infection—a new disease of man. *Ann Intern Med* 1977; **86**:1-5.

2 Chaudhuri AK, Hartley RB, Maddocks AC. Waterhouse-Friderichsen syndrome caused by a DF-2 bacterium in a splenectomised patient. *J Clin Pathol* 1981;**34**:172-3.

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Effect of chronic ranitidine treatment on secretion of intrinsic factor

The gastric parietal cell secretes both acid and intrinsic factor, and so there has been concern that treatment with histamine H_2-receptor antagonists might lead to reduced secretion of intrinsic factor and hence to cobalamin (vitamin B_{12}) deficiency. Cimetidine transiently inhibits secretion of intrinsic factor,[1 2] and Steinberg *et al*[3] found decreased absorption of protein-bound cobalamin. There is no evidence as yet, however, of clinical cobalamin deficiency developing as a result of treatment with cimetidine. We studied secretion of intrinsic factor in patients receiving ranitidine.

Patients, methods, and results

We measured the secretion of intrinsic factor in patients aged 31-61 years receiving a six-week course of ranitidine 300 mg/day for duodenal ulcer. Output of intrinsic factor and the concentration of intrinsic factor in gastric juice were measured by radioimmunoassay using the method of Gottlieb *et al*.[4] Three studies were performed on each patient—namely, before, during (at five weeks), and one week after treatment. Basal and pentagastrin-stimulated (6 μg/kg/h intravenously) outputs of intrinsic factor were measured. In addition, one hour after the pentagastrin infusion was started ranitidine (150 mg) was given intravenously and output of intrinsic factor measured for a further two hours.

The table summarises the results. Basal output of intrinsic factor, which during treatment was measured before the morning dose (10-12 hours after the evening dose), was statistically similar to output in the pretreatment and post-treatment studies. Thus during treatment there was no evidence of persistent inhibition from the previous dose. Pentagastrin-stimulated output was also similar in the three studies. After an intravenous bolus of ranitidine output dropped dramatically for the first hour and then quickly returned toward basal values. This return in the second hour was significantly faster during treatment than before or after.

Mean (± SEM) output of intrinsic factor (kU/h) in four patients

Study*	Basal	Pentagastrin-stimulated	After ranitidine†	
			0-60 min	60-120 min
1	0·68 ± 0·26	2·96 ± 0·47	0·08 ± 0·06	0·53 ± 0·30
2	1·32 ± 0·44	4·67 ± 1·10	0·10 ± 0·04	1·35 ± 0·42‡
3	0·81 ± 0·21	3·61 ± 0·73	0·07 ± 0·03	0·20 ± 0·06

*Study 1, before ranitidine treatment; study 2, during treatment; study 3, 1-2 weeks after treatment.
†150 mg given intravenously.
‡$p < 0{\cdot}05$ (compared with studies 1 and 3; analysis of variance, Wilcoxon test).

Comment

It may be wise to monitor cobalamin stores if long-term ranitidine treatment is used in patients likely to have impaired secretion of intrinsic factor—for example, those with severe fundic gastritis. In the great majority who have initially normal production of intrinsic factor, however, it seems unlikely that twice-daily ranitidine will produce malabsorption of cobalamin since secretion of intrinsic factor recovers rapidly after ranitidine and normal rates of secretion are well in excess of requirements for cobalamin absorption.[5]

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1 Binder HJ, Donaldson RM Jr. Effect of cimetidine on intrinsic factor and pepsin secretion in man. *Gastroenterology* 1978;**74**:371-5.

2 Fielding LP, Chalmers DM, Chanarin I, Levi AJ. Inhibition of intrinsic factor secretion by cimetidine. *Br Med J* 1978;i:818-9.

3 Steinberg WM, King CE, Toskes PP. Malabsorption of protein-bound cobalamin but not unbound cobalamin during cimetidine administration. *Dig Dis Sci* 1980;**25**:188-91.

4 Gottlieb C, Lau KS, Wasserman LR, Herbert V. Rapid charcoal assay for intrinsic factor (IF), gastric juice unsaturated B_{12} binding capacity, antibody to IF, and serum unsaturated B_{12} binding capacity. *Blood* 1965;**25**:875-84.

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